



Adjourn Meeting

Nate Morris motioned to adjourn the meeting, Nathan McNeil seconded the motion. With no further business to discuss, the MDWG adjourned.

Respectfully submitted,
Anthony Cook
SPP Staff Secretary

Southwest Power Pool
MODEL DEVELOPMENT WORKING GROUP
May 16, 2013
Sheraton Arlington, Arlington, Texas
9:00 A.M. – 5:00 P.M.

• D R A F T A G E N D A •

1. Administrative Joe Fultz (30 min)
 - a. Call to order
 - b. Proxies
 - c. Introductions
 - d. Approve agenda
 - e. Approve minutes of previous meetings
 - i. November 13, 2012
 - ii. November 30, 2012
 - iii. February 22, 2013
 - iv. March 1, 2013
 - v. March 15, 2013
 - f. Review of Past Action Items (Anthony Cook)
2. Stakeholder Survey Anthony Cook (15 min)
3. 2013 Series (30 min)
 - a. Powerflow (Anthony Cook)
 - b. Dynamic (Scott Jordan)
4. 2014 Series Anthony Cook (45 min)
 - a. MMWG Spring Meeting Updates
 - b. Model Selection
 - c. Schedule
5. Modeling Practices(2 hr)
 - a. Aux Load, Gross vs. Net, Pmax, Pgen, Pmin (Anthony Cook, Chris Haley)
 - b. Modeling of Mothballed vs. Retired/Decommissioned Units (Anthony Cook, Chris Haley)
 - c. Modeling granularity for units (Anthony Cook)
 - d. Not modeling known projects (Anthony Cook)
 - e. Tie Line Rating Methodology (Anthony Cook)
 - i. Planning vs. Real-time
6. Model Validation/Verification Efforts.....(1 hr)
 - a. Governor Response Survey (Scott Jordan)
 - b. Governor and Exciter Testing (Scott Jordan)
 - c. EMS State Estimator Comparison (Derek Brown)
7. MDWG Charter Updates All (30 min)
8. Other(1 hr)
 - a. Data Submittal Workbook Updates (Anthony Cook)
 - b. Breaker Modeling/Automated Contingency file (Brandon Hentschel)
 - c. New BES Definition
 - d. MOD Training (Anthony Cook)
 - e. Transformer Zero Sequence Data (Derek Brown)

f. CBA Dispatch in MDWG models

9. Closing Administrative Duties..... Joe Fultz (15 min)
- a. Review Action Items
 - b. Next meeting place and date
 - c. Next meeting topics
 - d. Adjourn meeting

DRAFT

**Southwest Power Pool
MODEL DEVELOPMENT WORKING GROUP
November 13, 2012
Southwest Power Pool Corporate Office
Little Rock, Arkansas
1:00 P.M. – 5:00 P.M.**

• M I N U T E S •

Agenda Item 1 - Administrative

The meeting was called to order at 1:18 p.m. The following Model Development Working Group (MDWG) members were in attendance:

Joe Fultz, Chair – Grand River Dam Authority (GRDA)
Nate Morris, Vice Chair – Empire District Electric (EDE)
Scott Rainbolt – American Electric Power (AEP)
Jason Shook – GDS Associates (GDS)
Nathan McNeil – Midwest Energy (MIDW)
Reené Miranda – Southwestern Public Service (SPS)
Brian Wilson – Kansas City Power & Light (KCPL)
John Boshears – City Utilities of Springfield (CUS)
Mike Clifton – Oklahoma Gas & Electric (OGE)
Mo Awad – Westar Energy (WR)
Dustin Betz - Public Power District (NPPD)

SPP Staff in attendance included Anthony Cook (Secretary), Kelsey Allen, Mitch Jackson, Brandon Hentschel, Zack Bearden, and Scott Jordan.

The following guests were also in attendance:

Derek Brown – Westar Energy (WR)
John Payne – Kansas Electric Power Cooperative (KEPCo)
Jason Bentz – American Electric Power (AEP)
Corey Falgout – American Electric Power (AEP)
Tim Smith – Western Farmers Electric Cooperative (WFEC)
Peter Howard - Kansas City Power & Light (KCPL)
Alex Mucha – Oklahoma Municipal Power Authority (OMPA)
Mark Reinart – Golden Spread Electric Cooperative (GSEC)
Aravind Chellappa – Southwestern Public Service (SPS)
Jeremy Pearman – Oklahoma Gas & Electric (OGE)
Ryan Einer – Oklahoma Gas & Electric (OGE)

Meeting Agenda

The agenda was reviewed by the group. Additions were made to Item 10. Nate Morris motioned to approve the agenda with the edit; Jason Shook seconded the motion. The motion passed unopposed.

(Attachment 1 - MDWG Meeting Agenda 20121113.doc)

Meeting Minutes

The July 26, 2012, August 25, 2012, August 29, 2012, and October 1, 2012 minutes were open for review. Nathan McNeil motioned to approve the previous meeting minutes; Nate Morris seconded the motion. The motion passed unopposed.

(Attachment 2 - Finalization of Powerflow Cases Email Vote 20120726.doc, Attachment 3 – Finalization of Dynamic Cases Email Vote 20120825.doc, Attachment 4 – MDWG Minutes 20120829.doc, Attachment 5 – Finalization of Dynamic Cases Email Vote 20121001.doc)

Review of Action Items

Anthony Cook reviewed some of the recently completed and in progress action items. Item #50: Staff has worked to edit the document. Hyperlinks have been made to reference various documents. Anthony is currently working to reorganize the manual.

Item #56: Entergy has agreed to coordinate loads to remove ZILs. Anthony has sent an email to those members with regional ties.

Item #85: This will be discussed in the meeting.

(Attachment 6 - SPP MDWG Action Items 20121113.xls)

Agenda Item 2 – Review of MDWG Charter:

The group reviewed the MDWG Charter for possible updates. There were some suggestions to change STEP to align more with ITP model building and emphasize these are not economic models. Members are to send proposal updates to Anthony for review at a future meeting.

Agenda Item 3 – MMWG Update:

Anthony Cook stated that the MMWG will build the 2013 Series Cases using PSS/E version 32. They will discuss a possible move to a newer version at the 2013 Spring meeting.

Agenda Item 4 – Data Reporting Requirements and Enforceability:

Anthony Cook stated that the Balance Authority (BA) is responsible for collecting data within their footprint according to the SPP Tariff. He also stated that that data is to be updated during the model building schedule. Reené Miranda stated that the Load Serving Entity (LSE) is required to submit data to SPP not the BA. Kelsey Allen stated the Regional Entity (RE) data request requires LSEs to submit data through the BA if they are a registered member. Reené stated that he disagrees that the BA be responsible for getting the LSE data. Anthony added that if an LSE doesn't supply the data upon the request of the BA and they are a member, SPP can assist in requesting the data. Reené and Mo Awad agree that data should be sent to SPP, but coordinated with the BA. Nathan McNeil added that this extends for generation and asked who is responsible for getting generation data for the models.

Kelsey stated that there needs to be a process improvement take place. Reene asked how many LSEs don't supply data as a percentage base. Mo asked for SPP to compile a list of LSEs to get an idea of how many companies this might involve.

Action Item – SPP staff to compile a list of LSEs

Action Item – Scott Jordan and Anthony cook will develop a process to use the data from GI and convert them to MOD Projects via the SPP Modeling Contacts.

Agenda Item 5 – Area Summary Report Evolution:

Anthony stated that SPP staff can create area summary reports based on the data within the models; however, if this needs to be LSE summaries, SPP can't create the reports. Mo Awad asked if the reports are needed. The group asked for SPP to find out if this is a requirement to create. If it isn't, the group is in favor of removing it from the data submittal workbook, otherwise SPP will create a LSE summary sheet template and distribute it to be filled out.

Action Item – SPP staff to find out if area summary reports are required.

Agenda Item 6 – Generation Retirement Process:

Nate Morris questioned the appropriate process for removing generation from the model. He cited the changes due to EPA regulations as well as retirements of generation in general. Anthony Cook stated that the unit should go through the undesignated resource process. Kelsey Allen added that the MDWG doesn't have an official process and that there is nothing preventing someone from removing a unit from the MDWG models. However, if the unit hasn't gone through the undesignated resource process, it will be added back into the ITP models. Nate asked how the discrepancy will be handled for planning if comparisons are made between the models.

Action Item – Anthony to ask TWG to discuss process for generation retirement and confidentiality.

Agenda Item 7 – Detail Modeling:

Anthony Cook began the discussion by asking the group how much detail is too much. He cited an example of two generators that have not been modeled and now want to be registered in the Market. Some Municipal's system are not modeled in detail, but are modeled as a load on a High Voltage (69, 115,138, or 161kV) bus. Should the generation units be modeled on the 138 kV bus or should the system be modeled in more detail to more accurately represent the system?

Mo Awad stated that it is a common practice to model the generation on the same voltage level as the load. Kelsey Allen added that the MITF Whitepaper states for generation registered to the market. Reené added that if it affects the dynamics of the system, detail should be included.

Anthony stated that this discussion is for information purpose only for now and no action is required.

Agenda Item 8 – EMS vs. MOD Modeling:

Scott Rainbolt described the internal process of updating ratings to MOD. He stated that SPP Operation staff continually contacts members asking why MOD ratings don't match EMS submissions. Kelsey explained that Ops staff uses MOD to validate seasonal ratings, but he encourages them to wait until the base case is updated. He added that the models need to be as accurate as possible so that if an event happens, the model can be used to replicate the event. The models are also needed for TCR to build models. Scott added that AEPW doesn't add updates until the next planning cycle.

Nathan McNeil stated that EMS operations sends out monthly emails for updates. Joe Fultz and Mo Awad stated that an email from the TO should supersede MOD.

Action Item – SPP modeling staff to educate operation staff on MOD.

Agenda Item 9 – CBA Model Update/Discussion:

Kelsey Allen reminded everyone to review the posted data and submit any comments.

Agenda Item 10 – Other:

a. 2013 Dynamic Model Build Schedule:

Scott Jordan discussed the proposed updates to the 2013 Series MDWG Dynamics schedule. He proposed taking 5 days from _____ and 5 days from _____ and adding the 10 days to the end for _____. Scott proposed the group review the changes and vote on them at a future meeting.

(Attachment 7 - 2013 MDWG Dynamics Model Build Schedule.pdf)

b. Dynamic Load Modeling:

Joe Fultz mentioned that dynamic load modeling is an item that was discussed in the TSTF and that for all who weren't aware, it is addressed in multiple standards that are out for comment. He asked if anyone was modeling dynamic load and if so to let their stability staff know that it will be a topic going forward due to the effects on stability studies.

Nathan McNeil stated that if there is going to be a significant change to how dynamic loads are modeled, it will take time to gather the necessary data.

c. Attachment AQ Updates:

Mo Awad gave an update on the TWG Attachment AQ process discussion from the November 7-8, 2012 meeting.

Agenda Item 11 - Closing Administrative Duties:

Next Meetings:

Face-to-Face: TBD, 2013

Next Meeting Topics: TBD

Summary of New Action Items

1. **SPP staff to compile a list of LSEs.**
2. **Scott Jordan and Anthony cook will develop a process to use the data from GI and convert them to MOD Projects via the SPP Modeling Contacts.**
3. **SPP staff to find out if area summary reports are required.**
4. **Anthony to ask TWG to discuss process for generation retirement and confidentiality.**
5. **SPP modeling staff to educate operation staff on MOD.**

Adjourn Meeting

Reené Miranda motioned to adjourn the meeting, Scott Schichtl seconded the motion. With no further business to discuss, the MDWG adjourned at 2:00 p.m.

Respectfully submitted,
Anthony Cook
SPP Staff Secretary

**Southwest Power Pool
MODEL DEVELOPMENT WORKING GROUP
November 30, 2012
Conference Call
1:00 P.M. – 2:00 P.M.**

• MINUTES •

The meeting was called to order at 1:04 p.m. The following Model Development Working Group (MDWG) members were in attendance:

Joe Fultz, Chair – Grand River Dam Authority (GRDA)
Nate Morris, Vice Chair – Empire District Electric (EDE)
John Boshears – City Utilities of Springfield (CUS)
Nathan McNeil – Midwest Energy (MIDW)
Reené Miranda – Southwestern Public Service (SPS)
Scott Rainbolt – American Electric Power (AEP)
Scott Schichtl – Arkansas Electric Cooperative (AECC)
Dustin Betz - Public Power District (NPPD)
Brian Wilson – Kansas City Power & Light (KCPL)

SPP Staff in attendance included Anthony Cook (Secretary), Scott Jordan, and Mitch Jackson.

The following guests were also in attendance:

Ryan Einer (Proxy for Mike Clifton) – Oklahoma Gas & Electric (OGE)
Jeremy Pearman – Oklahoma Gas & Electric (OGE)
Derek Brown – Westar Energy (WR)
Tim Smith – Western Farmers Electric Cooperative (WFEC)
Liam Stringham – Sunflower Electric Power Corporation (SEPC)
Ryan Yokley – Sunflower Electric Power Corporation (SEPC)
Jeremy Harris - Westar Energy (WR)
Kyle Drees- Westar Energy (WR)
Daniel Benedict – City of Independence, Missouri (INDN)
John Payne – Kansas Electric Power Cooperative (KEPCo)
Donnavan Leavitt – (EPIS)

Meeting Agenda

There was not an agenda prepared for this meeting.

Item 1 – 2013 Series Powerflow Schedule Update:

Anthony Cook stated to the group that the schedule needed updated due to the late posting of the MDWG 2013 Series Pass 3 models. He proposed extending the member submission date by one week and leaving the rest of the schedule the same. Nate Morris stated his concern of not giving enough time for the members to review the models. Anthony countered that a subset of the models was posted for review, thus

giving the members time to perform a preliminary overview during the original time frame. After some discussion by the group Nathan McNeil motioned to update the schedule with the proposed change. Dusting Betz seconded the motion. The motion passed with one member abstaining. Nate Morris with Empire District Electric abstained for the following reason:

EDE has concerns about compressing the available member review time in Pass 3 without any subsequent additional review time allotted to the members, especially due to the fact the majority of Pass 4 consists of the holiday season. The proposed schedule change appears to be in conflict with base reasoning as to why the members supported a single build vs. multiple builds. In not allowing for members to have more time to review/amend the models, there could be rippling effects in the forthcoming ITP review/study as well as any subsequent studies which are dependent on the 2013 Series Models.

Item 2 – 2013 Series Dynamics Schedule Update:

Scott Jordan reviewed the proposed changes to the Dynamics portion of the MDWG Schedule that he presented at the November 13, 2012 MDWG meeting. A request was made to have a “Post Preliminary Models” item and then a “Post Final Models...” item. Reené Miranda requested changing “DC” to “Dynamic Coordinator” to reduce confusion. Reené motioned to accept Scott’s proposal along with the new changes. Brian Wilson seconded the motion. The motion passed unopposed.

(Attachment 1 - 2013 MDWG Modeling Schedule_REV1.pdf)

Item 3 – PSSE V.32.2 Dynamics Correction:

Scott Jordan informed the group that one of the SPP Member had informed him of a case problem using the 2012 MDWG 2013S Reduced Dynamic Case. The Member sent the PSA file used to run the simulation causing PSSE Version 32.1 to stall. SPP Staff tested the PSA on the posted case and turned on the convergence monitoring. There were no messages during the simulation sent to the PDEV file that would cause the case to stall. SPP Staff also conferred with the Dynamics Coordinator concerning the situation and he agreed that there was nothing indicating a problem. SPP Staff then sent an e-mail to Siemens-PTI support. Siemens-PTI support sent a response that it had experienced some problems with some of the dynamic dyre file models in PSSE Version 32.1 and to download and test the simulation using PSSE Version 32.2. SPP Staff tested the simulation using PSSE Version 32.2 and the simulation ran using the snapshot, converted case, and DLL made using the previous version.

SPP Staff will work on a formal communication to the SPP Members and will more than likely ask the MDWG to change the version of PSSE to Version 32.2 sometime after the first of the year. This verbal communication of this situation is informal and intended at this time as a preliminary finding to a situation using PSSE Version 32.1. SPP Staff wants to make sure that they understand the full impact of the move to the new version. SPP Staff will have more communications with Siemens-PTI Support.

Item 4 - Closing Administrative Duties:



Adjourn Meeting

With no further business to discuss, the MDWG adjourned at 2:16 p.m.

Respectfully submitted,

Anthony Cook
SPP Staff Secretary

**Southwest Power Pool
MODEL DEVELOPMENT WORKING GROUP**

February 22, 2013

Conference Call

10:00 A.M. – 11:00 A.M.

• MINUTES •

The meeting was called to order at 10:37 a.m. The following Model Development Working Group (MDWG) members were in attendance:

Joe Fultz, Chair – Grand River Dam Authority
Nate Morris, Vice Chair – Empire District Electric
Nathan McNeil – Midwest Energy
Reené Miranda – Southwestern Public Service
Scott Rainbolt – American Electric Power
Scott Schichtl – Arkansas Electric Cooperative
Dustin Betz – Nebraska Public Power District
Derek Brown – Westar Energy
Mike Clifton – Oklahoma Gas & Electric
Brian Wilson – Kansas City Power & Light
Jason Shook – GDS Associates

SPP Staff in attendance included Anthony Cook (Secretary), Scott Jordan, Brandon Hentschel, Mitch Jackson, James Bailey, and Greg Sorenson (RE).

The following guests were also in attendance:

Jerry Bradshaw – (Proxy for John Boshears) City Utilities of Springfield
Ryan Einer – Oklahoma Gas & Electric
Darryl Bogges – Western Farmers Electric Cooperative
Liam Stringham – Sunflower Electric Power Corporation
Mo Awad - Westar Energy (WR)
John Payne – Kansas Electric Power Cooperative
Jason Bentz – American Electric Power
Matthew Bordelon – Central Louisiana Electric Company
Alan Burbach – Lincoln Electric System
Alex Dobson – Oklahoma Municipal Power Authority
Tom Miller – ITC Great Plains
Gimod Olapurayil – ITC Great Plains
David Sargent – Southwestern Power Administration
Jon Mayhan – Omaha Public Power District
John Shipman – Omaha Public Power District
Jeff Stewart – Lafayette Utilities System
James Simms – Southwestern Public Service
Donna Parks – Grand River Dam Authority
Martin Green – Grand River Dam Authority
Todd Wheeler – EPIS

**Southwest Power Pool
MODEL DEVELOPMENT WORKING GROUP**

**March 15, 2013
Conference Call
9:00 A.M. – 10:00 A.M.**

• MINUTES •

The meeting was called to order at 9:11 a.m. The following Model Development Working Group (MDWG) members were in attendance:

Joe Fultz, Chair – Grand River Dam Authority
Nate Morris, Vice Chair – Empire District Electric
Nathan McNeil – Midwest Energy
Scott Rainbolt – American Electric Power
Scott Schichtl – Arkansas Electric Cooperative
Dustin Betz – Nebraska Public Power District
Derek Brown – Westar Energy
Mike Clifton – Oklahoma Gas & Electric
Brian Wilson – Kansas City Power & Light
Jason Shook – GDS Associates

SPP Staff in attendance included Anthony Cook (Secretary), Brandon Hentschel, Mitch Jackson, John Mills, and Mike Hughes (RE).

The following guests were also in attendance:

Aravind Chellappa – (Proxy for Reené Miranda) Southwestern Public Service
Jerry Bradshaw – (Proxy for John Boshears) City Utilities of Springfield
Tim Smith – Western Farmers Electric Cooperative
John Mayhan – Omaha Public Power District
Chad Reed – Arkansas Electric Cooperative
Alex Mucha – Oklahoma Municipal Power Authority
Gimod Olapurayil – ITC Great Plains
Donna Parks – Grand River Dam Authority
Martin Green – Grand River Dam Authority

Meeting Agenda

There was not an agenda prepared for the meeting.

Item 1 – 2013 Series Short Circuit Model Status:

Brandon Hentschel informed the group of the updates received and issues still remaining. John Mayhan asked about additional checks such as transformers with the

windings wrong. Anthony Cook stated that additional screenings could be added to the docucheck program for short circuit purposes.

Nathan McNeil asked if there is a need for developing PSSE and ASPEN models. He stated that he ran a few fault analyses in ASPEN on the two sets and obtained the same results. Anthony stated that this needs to be looked into further before discontinuing the ASPEN User models. Nathan volunteered to help with the additional research.

Scott Schichtl requested adding the Short Circuit Task Force (SCTF) recommendations to the MDWG Procedure Manual.

Brian Wilson motioned to finalize the 2013 Series Short Circuit models as is. Nathan McNeil seconded the motion. The motion passed unopposed.

Adjourn Meeting

With no further business to discuss, Scott Schichtl motioned to adjourn the meeting. Jason Shook seconded the motion. The MDWG adjourned at 9:42 am.

Respectfully submitted,

Anthony Cook
SPP Staff Secretary

	Action Item	Responsible Parties	Date Originated	Date Updated	Progress	Notes
42	Review the new MOD standards approved by FERC and how they will apply to the MDWG and SPP planning modeling	SPP Staff	3/1/2010	5/16/2013	In Progress	Further review with the new NERC MOD standards being developed.
50	Reformat the MDWG procedure manual and add hyperlinks for referenced documents	Anthony Cook	8/6/2010	5/16/2013	In Progress	Currently working on updates from the MMWG manual.
56	Discuss with Entergy about SPP members modeling load with zero impedance lines	SPP Staff	8/6/2010	5/16/2013	Complete	Entergy prefer this method to reduce the amount of coordination and errors when creating the MMWG models. (5/8)Push to get rid of the ZILs. (5/24)Entergy is onboard to coordinate loads to remove ZILs. (10/31) Sent emails to members with regional ties as first step.
57	Determine the standards for stability load data	Scott Jordan	8/6/2010	5/16/2013	In Progress	Scott to give update of TSTF discussion at May 8, 2012 meeting. Being discussed at the MMWG.
71	Staff to review previous meeting minutes for resolution of any language discrepancies in the SPP Tariff about Uniform Generation Modeling	Kelsey Allen	11/8/2011		In Progress	
72	Staff to provide background information on reasons for choosing 20 MVA for machines and aggregate plant capacity for Uniform Generation Modeling when modeling auxiliary load	Staff	11/8/2011	5/8/2012	In Progress	This has been pushed back to the MITF for justification per the 12/6 meeting.
76	Look for ways to shorten the Dynamic Build.	Scott Jordan	2/8/2012	5/16/2013	In Progress	Internal Build? When could that take effect? Scott Jordan is attending training.
83	Ask TWG to review Attachment AQ for special circumstances.	SPP Staff	5/8/2012	5/16/2013	In Progress	Adding load to new substation due to load growth because existing substation is at capacity. An AQ task force was created.
84	RTO/RE staff and MDWG to address data reporting requirements and enforceability for independently owned generation and transmission assets.	MDWG/Staff	8/29/2012	11/13/2012	In Progress	TWG action item: Who is responsible, When data exchange is required, How to enforce data exchange.
85	SPP Staff to compile a list of LSEs	SPP Staff	11/13/2012	5/16/2013	In Progress	Compile a list to determine how many LSEs don't supply data as a percentage base.

Model Development Working Group	2012	2011	2010
Number of members	13	13	13
Number of responses	10	13	12
Response rate	77%	100%	92%
Overall effectiveness score	4.0	3.9	3.9
Lowest score			
Highest score			

Question	Average score		
	2012	2011	2010
The agenda reflects the actions to be taken during the meeting.	4.2	4.5	4.5
Meeting materials are provided in a timely manner.	3.7	3.8	3.6
The information provided prior to the meeting is utilized during the meeting.	4.1	4.2	4.2
The information presented in meetings is clear.	4.1	n/a	n/a
Meeting minutes are an accurate reflection of the meeting.	4.0	4.4	4.1
Additional comments:			
Materials should be provided at least 1 week before the meeting. Due to the lateness of the minutes, it is difficult to remember when they are provided several weeeeks later. The raw minutes should be shown during the end meeting or as every topic of discussion ends and emailed prior to the end of the meeting.			
Membership represents the diversity of the SPP organization.	4.0	4.1	4.3
Membership has the necessary expertise and/or skills to accomplish its goals.	3.8	4.3	4.3
Members come prepared to meetings.	3.9	4.2	3.6
Members are committed to participate and accomplish the group's goals.	3.8	4.2	4.1
Members are supportive and respectful of the individual needs and differences of group members.	4.5	4.3	4.5
Additional comments:			
Members with small transmission systems do not understand the problems of those having a larger system, with imbedded LSEs that are not members of SPP.			
Members are focused during discussion.	3.7	4.3	4.1
Decisions are identified and action is recommended.	3.9	4.2	3.8
Facilitation is sufficient to guide discussion.	3.9	4.2	4.0
Dissenting voices are heard.	3.8	4.2	4.1
I depart with a feeling that we have accomplished something.	3.9	4.1	3.8
Additional comments:			
SPP seems to have certain agendas that they want to push thru due to their internal processes without regard to the processes of other companies.			
The chair seeks input, and organizational group members are able to influence key decisions and plans.	4.2	4.2	4.3
The chair is supportive and respectful of the individual needs and differences of group members.	4.3	4.3	4.3
The chair keeps the group on task to achieve appropriate outcomes.	3.8	4.5	4.2
The chair ensures follow-through on questions and commitments.	3.7	4.3	3.9
Additional comments:			
Please provide three or more recommendations for improvement of this particular group and/or SPP's overall organizational group structure			
1. I don't believe SPP clearly understands the importance of having accurate models. SPP as a whole seems that it much rather meet a deadline than correct the models with the latest Build			
More questions need to be brought to the group as talking points in the meetings so that anyone else dealing with those same issues might benefit from other discussions. I would like to have more emphasis on NERC compliance issues and maybe a more unified/group approach for NERC compliance. This would allow for the members to reference how others approach their respective compliance efforts.			
Other comments			
The SPP model building department needs more individuals doing the work that pay attention to detail, the importance of accurate models. SPP as the Planning Authority needs to demand data from non-SPP members within the SPP footprint, so the entire transmission system 60kV and greater is included. The LSEs should include TOs, Municipals, Cooperatives, IPP. Additionally, data that is provided by the SPP Generation Interconnection Studies department is inaccurate and incomplete and does not comply with the MDWG Manual.			
I wish Mo was the Vice Chair.			

ID	WBS	Task Name	Duration	Start	Finish	Resource Names
1	1	11/30/2013 Revised Approved	108 days	Thu 1/31/13	Wed 7/3/13	
2	4	MDWG DYNAMICS MODELS	108 days	Thu 1/31/13	Wed 7/3/13	
3	4.10	2013 Model Updates	108 days	Thu 1/31/13	Wed 7/3/13	
4	4.10.57	Initial Data Update	29 days	Thu 1/31/13	Wed 3/13/13	
5	4.10.57.33	Build and Post DYRE Files, Wind Farm Data, and Docureport	10 days	Thu 1/31/13	Wed 2/13/13	SPP
6	4.10.57.34	Members Submit Data Updates	14 days	Thu 2/14/13	Wed 3/6/13	Members
7	4.10.57.35	Member Data Due	0 days	Wed 3/6/13	Wed 3/6/13	Members
8	4.10.57.36	Deliver Model Corrections to Dynamic Coordinator	5 days	Thu 3/7/13	Wed 3/13/13	SPP
9	4.10.58	Dynamic Coordinator builds initial models and submits issues	20 days	Thu 3/14/13	Wed 4/10/13	Powertech
10	4.10.59	Final Data Update	18 days	Thu 4/11/13	Mon 5/6/13	
11	4.10.59.41	Prepare and Post Dynamic Coordinator Issues	2 days	Thu 4/11/13	Fri 4/12/13	SPP
12	4.10.59.42	Members Submit Data Updates	10 days	Mon 4/15/13	Fri 4/26/13	Members
13	4.10.59.43	Member Data Due	0 days	Fri 4/26/13	Fri 4/26/13	Members
14	4.10.59.44	Model Corrections	5 days	Mon 4/29/13	Fri 5/3/13	SPP
15	4.10.59.45	Deliver Model Corrections to Dynamic Coordinator	1 day	Mon 5/6/13	Mon 5/6/13	SPP
16	4.10.60	Dynamic Coordinator builds and posts final models	10 days	Tue 5/7/13	Mon 5/20/13	Powertech
17	4.10.61	Build Preliminary Models	9 days	Tue 5/21/13	Mon 6/3/13	SPP
18	4.10.62	Post Preliminary Models	0 days	Tue 6/4/13	Tue 6/4/13	SPP
19	4.10.63	Member Review	10 days	Wed 6/5/13	Tue 6/18/13	Members
20	4.10.64	Apply Corrections Due to Member Feedback	10 days	Wed 6/19/13	Tue 7/2/13	SPP
21	4.10.65	Post Final Models based on Member Feedback	1 day	Wed 7/3/13	Wed 7/3/13	SPP
22						
23						
24	2	05/08/2013 Proposed Revision to 2013 Dynamics	144 days	Thu 1/31/13	Fri 8/23/13	
25	4	MDWG DYNAMICS MODELS	144 days	Thu 1/31/13	Fri 8/23/13	
26	4.10	2013 Model Updates	144 days	Thu 1/31/13	Fri 8/23/13	
27	4.10.57	Initial Data Update	29 days	Thu 1/31/13	Wed 3/13/13	
28	4.10.57.33	Build and Post DYRE Files, Wind Farm Data, and Docureport	10 days	Thu 1/31/13	Wed 2/13/13	SPP
29	4.10.57.34	Members Submit Data Updates	14 days	Thu 2/14/13	Wed 3/6/13	Members
30	4.10.57.35	Member Data Due	0 days	Wed 3/6/13	Wed 3/6/13	Members
31	4.10.57.36	Deliver Model Corrections to Dynamic Coordinator	5 days	Thu 3/7/13	Wed 3/13/13	SPP
32	4.10.58	Dynamic Coordinator builds initial models and submits issues	19 days	Mon 5/6/13	Fri 5/31/13	Powertech
33	4.10.59	Final Data Update	18 days	Mon 6/3/13	Wed 6/26/13	
34	4.10.59.41	Prepare and Post Dynamic Coordinator Issues	2 days	Mon 6/3/13	Tue 6/4/13	SPP
35	4.10.59.42	Members Submit Data Updates	10 days	Wed 6/5/13	Tue 6/18/13	Members
36	4.10.59.43	Member Data Due	0 days	Tue 6/18/13	Tue 6/18/13	Members
37	4.10.59.44	Model Corrections	5 days	Wed 6/19/13	Tue 6/25/13	SPP
38	4.10.59.45	Deliver Model Corrections to Dynamic Coordinator	1 day	Wed 6/26/13	Wed 6/26/13	SPP
39	4.10.60	Dynamic Coordinator builds and posts final models	9 days	Thu 6/27/13	Wed 7/10/13	Powertech
40	4.10.61	Build Preliminary Models	10 days	Thu 7/11/13	Wed 7/24/13	SPP
41	4.10.62	Post Preliminary Models	0 days	Thu 7/25/13	Thu 7/25/13	SPP
42	4.10.63	Member Review	10 days	Fri 7/26/13	Thu 8/8/13	Members
43	4.10.64	Apply Corrections Due to Member Feedback	10 days	Fri 8/9/13	Thu 8/22/13	SPP
44	4.10.65	Post Final Models based on Member Feedback	1 day	Fri 8/23/13	Fri 8/23/13	SPP

2014 Series Model Selection

Multiregional Modeling Working Group

Year	Season	Power Flow Model	Dynamic Model	
2015	Light Load	X	X	
2015	Spring	X		
2015	Summer	X	X	
2015	Summer Shoulder	X	X	
2015	Fall	X		
2015	Winter	X	X	
2016	Spring	X		
2016	Summer	X	X	
2016	Winter	X		
2020	Light Load	X	X	
2020	Summer	X	X	
2020	Winter	X	X	
2025	Summer	X		

Model Develop

Year	Season
2014	Spring
2014	Summer
2014	Summer Shoulder
2014	Fall
2014	Winter
2015	Light Load
2015	Spring
2015	Summer
2015	Summer Shoulder
2015	Fall
2015	Winter
2016	Spring
2016	Summer
2016	Winter
2020	Light Load
2020	Summer
2020	Winter
2025	Summer
2025	Winter

* All models rolled up 1 year

ment Working Group*

Power Flow Model	Dynamic Model	Short Circuit Model
X		
X		X
X		
X		
X		
X	X	
X		
X	X	
X	X	
X		
X	X	
X		
X	X	
X	X	
X	X	X
X	X	
X	X	
X		

r from 2013 Series.

ID	WBS	Task Name	Duration	Start	Finish	Resource Names
0		2014 MDWG Powerflow and Dynamics Models_DRAFT	220 days	Mon 7/15/13	Wed 5/28/14	
1	1	2014 MDWG Powerflow and Dynamics Models	220 days	Mon 7/15/13	Wed 5/28/14	
2	1.1	Kick-off	18 days	Mon 7/15/13	Wed 8/7/13	
3	1.1.1	Kick-off - Review MOD Projects	8 days	Mon 7/15/13	Wed 7/24/13	
4	1.1.1.1	Kick-off - Review MOD Projects	8 days	Mon 7/15/13	Wed 7/24/13	SPP
5	1.1.2	Kick-off - Lock Down MOD	18 days	Mon 7/15/13	Wed 8/7/13	SPP
6	1.1.3	Kick-off - MOD Model Extraction	1 day	Thu 7/25/13	Thu 7/25/13	SPP
7	1.2	Kick-off - Build Pass 1 Powerflow	9 days	Fri 7/26/13	Wed 8/7/13	
8	1.2.1	Kick-off - Build Pass 1 Powerflow	9 days	Fri 7/26/13	Wed 8/7/13	SPP
9	1.3	Kick-off - Post Pass 1 Powerflow	0 days	Wed 8/7/13	Wed 8/7/13	SPP
10	1.4	Kick-off - Initial Data Request (Contingency List Updates, Transactions, MTL)	0 days	Wed 8/7/13	Wed 8/7/13	SPP
11	1.5	Pass 1	37 days	Thu 8/8/13	Mon 9/30/13	
12	1.5.1	Pass 1 - Members Review/Submit Changes to Pass 1 Models	17 days	Thu 8/8/13	Fri 8/30/13	Members
13	1.5.2	Pass 1 - Member Review/Changes Due (Projects, Transactions, MTL, Contingency List)	0 days	Fri 8/30/13	Fri 8/30/13	Members
14	1.5.3	Pass 1 - Review MOD Projects	29 days	Thu 8/8/13	Wed 9/18/13	
15	1.5.3.1	Pass 1 - Review MOD Projects	29 days	Thu 8/8/13	Wed 9/18/13	SPP
16	1.5.4	Pass 1 - Lock Down MOD	20 days	Tue 9/3/13	Mon 9/30/13	SPP
17	1.5.5	Pass 1 - MOD Model Extraction	0 days	Wed 9/18/13	Wed 9/18/13	SPP
18	1.5.6	Pass 1 - Build Pass 2 Powerflow Models	8 days	Thu 9/19/13	Mon 9/30/13	
19	1.5.6.1	Pass 1 - Build Pass 2 Powerflow Models	8 days	Thu 9/19/13	Mon 9/30/13	SPP
20	1.5.7	Pass 1 - Post Pass 2 Powerflow Models	0 days	Mon 9/30/13	Mon 9/30/13	SPP
21	1.5.8	Pass 1 - Pass 2 ACCC Analysis	1 day	Mon 9/30/13	Mon 9/30/13	SPP
22	1.6	Pass 2 - Including MMWG Model Update	20 days	Tue 10/1/13	Mon 10/28/13	
23	1.6.1	Pass 2 - Members Review/Submit Changes to Pass 2 Powerflow Models	9 days	Tue 10/1/13	Fri 10/11/13	Members
24	1.6.2	Pass 2 - Member Review/Changes Due	0 days	Fri 10/11/13	Fri 10/11/13	Members
25	1.6.3	Request First Tier external Short Circuit sequence data	0 days	Mon 10/14/13	Mon 10/14/13	SPP
26	1.6.4	Pass 2 - Review MOD Projects	19 days	Tue 10/1/13	Fri 10/25/13	
27	1.6.4.1	Pass 2 - Review MOD Projects	14 days	Tue 10/1/13	Fri 10/18/13	SPP
28	1.6.4.2	Pass 2 - Lock Down MOD	11 days	Fri 10/11/13	Fri 10/25/13	SPP
29	1.6.5	Pass 2 - MOD Model Extraction	1 day	Mon 10/21/13	Mon 10/21/13	SPP
30	1.6.6	Pass 2 - Build Pass 3 Powerflow Models	5 days	Mon 10/21/13	Fri 10/25/13	
31	1.6.6.1	Pass 2 - Build Pass 3 Powerflow Models - Merge with 2013 MMWG Series	5 days	Mon 10/21/13	Fri 10/25/13	SPP
32	1.6.7	Pass 2 - Post Pass 3 Powerflow Models	0 days	Fri 10/25/13	Fri 10/25/13	SPP
33	1.6.8	Pass 2 - Pass 3 ACCC Analysis	1 day	Mon 10/28/13	Mon 10/28/13	SPP
34	1.7	Pass 3	14 days	Mon 10/28/13	Thu 11/14/13	
35	1.7.1	Pass 3 - Members Review/Submit Changes to Pass 3 Powerflow Models	13 days	Mon 10/28/13	Wed 11/13/13	Members
36	1.7.2	Pass 3 - Member Review/Changes Due	0 days	Wed 11/13/13	Wed 11/13/13	Members
37	1.7.3	Pass 3 - Review MOD Projects	13 days	Mon 10/28/13	Wed 11/13/13	
38	1.7.3.1	Pass 3 - Review MOD Projects	13 days	Mon 10/28/13	Wed 11/13/13	SPP
39	1.7.4	Pass 3 - Lock Down MOD	0 days	Wed 11/13/13	Wed 11/13/13	SPP
40	1.7.5	Pass 3 - MOD Model Extraction	0 days	Wed 11/13/13	Wed 11/13/13	SPP
41	1.7.6	Pass 3 - Model Update Meeting	3 days	Tue 11/12/13	Thu 11/14/13	
42	1.7.7	Pass 3 - Build Pass 4 Powerflow Models	0 days	Wed 11/13/13	Wed 11/13/13	
43	1.7.7.1	Pass 3 - Build Pass 4 Powerflow Models	0 days	Wed 11/13/13	Wed 11/13/13	SPP
44	1.7.8	Pass 3 - Post Pass 4 Powerflow Models	0 days	Wed 11/13/13	Wed 11/13/13	SPP
45	1.7.9	Pass 3 - Pass 4 ACCC Analysis	0 days	Wed 11/13/13	Wed 11/13/13	SPP
46	1.8	Pass 4	25 days	Thu 11/14/13	Fri 12/20/13	
47	1.8.1	Pass 4 - Members Review/Submit Changes to Pass 4 Powerflow Models	15 days	Thu 11/14/13	Fri 12/6/13	Members
48	1.8.2	Pass 4 - Member Review/Changes Due	0 days	Fri 12/6/13	Fri 12/6/13	Members
49	1.8.3	Pass 4 - Request Review of 2014 ITP IDEVS	0 days	Fri 11/15/13	Fri 11/15/13	SPP
50	1.8.4	Pass 4 - Review MOD Projects	17 days	Thu 11/14/13	Tue 12/10/13	
51	1.8.4.1	Pass 4 - Review MOD Projects	17 days	Thu 11/14/13	Tue 12/10/13	SPP
52	1.8.5	Pass 4 - Lock Down MOD	11 days	Fri 12/6/13	Fri 12/20/13	SPP
53	1.8.6	Pass 4 - MOD Model Extraction	1 day	Wed 12/11/13	Wed 12/11/13	SPP
54	1.8.7	Pass 4 - Build Pass 5 Powerflow Models	8 days	Wed 12/11/13	Fri 12/20/13	
55	1.8.7.1	Pass 4 - Build Pass 5 Powerflow Models	8 days	Wed 12/11/13	Fri 12/20/13	SPP
56	1.8.8	Pass 4 - Post Pass 5 Powerflow Models	0 days	Fri 12/20/13	Fri 12/20/13	SPP
57	1.8.9	Pass 4 - Pass 5 ACCC Analysis	1 day	Fri 12/20/13	Fri 12/20/13	SPP
58	1.9	Pass 5	23 days	Mon 12/23/13	Mon 1/27/14	
59	1.9.1	Pass 5 - Members Review/Submit Changes to Pass 5 Powerflow Models	12 days	Mon 12/23/13	Fri 1/10/14	Members
60	1.9.2	Pass 5 - Member Review/Changes Due	0 days	Fri 1/10/14	Fri 1/10/14	Members
61	1.9.3	Pass 5 - Review MOD Projects	17 days	Mon 12/23/13	Fri 1/17/14	
62	1.9.3.1	Pass 5 - Review MOD Projects	17 days	Mon 12/23/13	Fri 1/17/14	SPP
63	1.9.4	Pass 5 - Lock Down MOD	11 days	Fri 1/10/14	Fri 1/24/14	SPP
64	1.9.5	Pass 5 - MOD Model Extraction	1 day	Mon 1/20/14	Mon 1/20/14	SPP
65	1.9.6	Pass 5 - Build Final Powerflow Models	5 days	Mon 1/20/14	Fri 1/24/14	
66	1.9.6.1	Pass 5 - Build Final Powerflow Models - with ITP NTC IDEVS	5 days	Mon 1/20/14	Fri 1/24/14	SPP
67	1.9.7	Pass 5 - Post MDWG 2014 Series Build Final Powerflow Models	0 days	Fri 1/24/14	Fri 1/24/14	SPP
68	1.9.8	Pass 5 - Final ACCC Analysis	1 day	Mon 1/27/14	Mon 1/27/14	SPP
69	1.10	Final	10 days	Mon 1/27/14	Fri 2/7/14	
70	1.10.1	Final - Member Review for Finalization of Powerflow Models	10 days	Mon 1/27/14	Fri 2/7/14	Members
71	1.11	MDWG Short Circuit Models - Build Pass 1 Short Circuit Models	21 days	Mon 2/10/14	Tue 3/11/14	
72	1.11.1	Pass 1 - Build Pass 1 Short Circuit Models	2 days	Mon 2/10/14	Tue 2/11/14	SPP
73	1.11.2	Pass 1 - Post Pass 1 Short Circuit Models	0 days	Tue 2/11/14	Tue 2/11/14	SPP
74	1.11.3	Pass 1 - Members Review/Submit Changes to Pass 1 Short Circuit Models	7 days	Wed 2/12/14	Fri 2/21/14	Members
75	1.11.4	Pass 1 - Member Review/Changes Due	0 days	Fri 2/21/14	Fri 2/21/14	Members
76	1.11.5	Final - Implement Member Changes/Updates to Pass 1 Short Circuit Models	2 days	Mon 2/24/14	Tue 2/25/14	SPP
77	1.11.6	Final - Post MDWG 2014 Series Final Short Circuit Models	0 days	Tue 2/25/14	Tue 2/25/14	SPP
78	1.11.7	Final - Member Review for Finalization of Powerflow Models	10 days	Wed 2/26/14	Tue 3/11/14	Members
79	1.12	MDWG DYNAMICS MODELS	123 days	Mon 12/2/13	Wed 5/28/14	
80	1.12.1	2014 Model Updates	123 days	Mon 12/2/13	Wed 5/28/14	
81	1.12.1.1	Dynamic Coordinator Contract	63 days	Mon 12/2/13	Tue 3/4/14	
82	1.12.1.1.1	Create RFP for Dynamic Coordinator	18 days	Mon 12/2/13	Fri 12/27/13	SPP
83	1.12.1.1.2	SPP Delivers RFP to Dynamics Coordinator	5 days	Mon 12/30/13	Mon 1/6/14	SPP
84	1.12.1.1.3	Dynamic Coordinator Reviews RFP	10 days	Tue 1/7/14	Mon 1/20/14	
85	1.12.1.1.4	SPP and Dynamic Coordinator Finalize Contract	30 days	Tue 1/21/14	Tue 3/4/14	SPP
86	1.12.1.2	Initial Data Update	35 days	Mon 12/23/13	Wed 2/12/14	
87	1.12.1.2.1	Initial Data Update - Build and Post DYRE Files, Wind Farm Data, and Docureport	10 days	Mon 12/23/13	Wed 1/8/14	
88	1.12.1.2.1.1	Initial Data Update - Build and Post DYRE Files, Wind Farm Data, and Docureport	10 days	Mon 12/23/13	Wed 1/8/14	SPP
89	1.12.1.2.2	Initial Data Update - Members Submit Data Updates	20 days	Thu 1/9/14	Wed 2/5/14	Members
90	1.12.1.2.3	Initial Data Update - Member Data Due	0 days	Wed 2/5/14	Wed 2/5/14	Members
91	1.12.1.2.4	Initial Data Update - Deliver Model Corrections to DC	5 days	Thu 2/6/14	Wed 2/12/14	
92	1.12.1.2.4.1	Initial Data Update - Deliver Model Corrections to DC	5 days	Thu 2/6/14	Wed 2/12/14	SPP
93	1.12.1.3	Initial Data Update - DC builds initial models and submits issues	20 days	Thu 2/13/14	Thu 3/13/14	
94	1.12.1.4	Final Data Update	23 days	Fri 3/14/14	Tue 4/15/14	
95	1.12.1.4.1	Prepare and Post DC Issues	2 days	Fri 3/14/14	Mon 3/17/14	
96	1.12.1.4.1.1	Prepare and Post DC Issues	2 days	Fri 3/14/14	Mon 3/17/14	SPP
97	1.12.1.4.2	Members Submit Data Updates	15 days	Tue 3/18/14	Mon 4/7/14	Members
98	1.12.1.4.3	Member Data Due	0 days	Mon 4/7/14	Mon 4/7/14	Members
99	1.12.1.4.4	Model Corrections	5 days	Tue 4/8/14	Mon 4/14/14	
100	1.12.1.4.4.1	Model Corrections	5 days	Tue 4/8/14	Mon 4/14/14	SPP
101	1.12.1.4.5	Deliver Model Corrections to DC	1 day	Tue 4/15/14	Tue 4/15/14	SPP
102	1.12.1.5	Final Data Update - DC builds and posts final models	10 days	Wed 4/16/14	Tue 4/29/14	
103	1.12.1.6	Build Final Models	10 days	Wed 4/30/14	Tue 5/13/14	
104	1.12.1.6.1	Final Data Update - Build Final Models	10 days	Wed 4/30/14	Tue 5/13/14	SPP
105	1.12.1.7	Post Final Models	0 days	Tue 5/13/14	Tue 5/13/14	SPP
106	1.12.1.8	Member Review	10 days	Wed 5/14/14	Wed 5/28/14	Members

Generation Reporting Differences

May 16, 2013

Anthony Cook

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Generation Reporting Differences

Method 1:

- Pmax is Gross Maximum Seasonal Capability
- Station (Aux) Load is modeled explicitly
- $P_{\max} - \text{Aux Load} = \text{Net Capability}$

Method 2:

- Pmax is Net Maximum Seasonal Capability
- Station (Aux) Load is not modeled
- $P_{\max} = \text{Net Capability}$

Generation Reporting Differences

2013 Series MDWG: 2013 Summer

Pmax (Coal)	364 MW
Pgen	333 MW
Aux Load	N/A

Model Assumption 1: Pmax is Net

2011 EIA 860

Name Plate	419 MW
Summer Capability	364 MW

Note: Pmax = Summer Capability

New Assumption 1: Pmax is Net

Generation Reporting Differences

2013 Series MDWG: 2013 Summer

Pmax (Coal)	108.4 MW
Pgen	108.1 MW
Aux Load	8.4 MW

Model Assumption 1: Pmax is Gross

Model Assumption 2: $P_{\max} - \text{Aux Load} = 100 \text{ MW}$

2011 EIA 860

Name Plate	109.8 MW
Summer Capability	100 MW

Note: $P_{\max} - \text{Aux Load} = \text{Summer Capability}$

Generation Reporting Differences

2013 Series MDWG: 2013 Summer

Pmax (Gas – CT1)	165 MW
Pgen	125 MW
Aux Load	N/A

Model Assumption 1: Pmax is Net

GADS: Pmax = 209, Dependable = 202

Pmax (Gas – CT2)	165 MW
Pgen	125 MW
Aux Load	N/A

Model Assumption 1: Pmax is Net

GADS: Pmax = 197, Dependable = 168

2011 EIA 860

Name Plate	206 MW
Summer Capability	191.8 MW

Warning: Pmax < Summer Capability

Issue: What is Pmax ?

Name Plate	206 MW
Summer Capability	174.4 MW

Warning: Pmax < Summer Capability

Issue: What is Pmax ?

Generation Reporting Differences

2013 Series MDWG: 2013 Summer

Pmax (Gas-Steam)	265 MW
Pgen	175 MW
Aux Load	N/A

Model Assumption 1: Pmax is Net

GADS: Pmax = 251

2011 EIA 860

Name Plate	265 MW
Summer Capability	248 MW

Issue 1: Pmax \neq Summer Capability

New Assumption 1: Pmax is Gross

New Assumption 2: Aux Load = 17 MW

Generation Reporting Differences

2013 Series MDWG: 2013 Summer

Pmax (Coal)	719 MW
Pgen	706 MW
Aux Load	41 MW

Model Assumption 1: Pmax is Gross

Model Assumption 2: $P_{max} - \text{Aux Load} = 678 \text{ MW}$

Pmax (Coal)	732 MW
Pgen	717 MW
Aux Load	32 MW

Model Assumption 1: Pmax is Gross

Model Assumption 2: $P_{max} - \text{Aux Load} = 700 \text{ MW}$

2011 EIA 860

Name Plate	681.3 MW
Summer Capability	665 MW

Issue 1: $P_{gen} - \text{Aux Load} = \text{Summer Capability}$

Issue 2: What is Pmax ?

Name Plate	681.3 MW
Summer Capability	700 MW

$P_{max} - \text{Aux Load} = \text{Summer Capability}$

Generation Reporting Differences

2013 Series MDWG: 2013 Summer

Pmax (Coal)	540 MW
Pgen	515 MW
Aux Load	N/A

Model Assumption 1: Pmax is Net

Pmax (Coal)	540 MW
Pgen	500 MW
Aux Load	N/A

Assumption 1: Pmax is Net

2011 EIA 860

Name Plate	569 MW
Summer Capability	515 MW

Issue 1: Pmax \neq Summer Capability

New Assumption 1: Pmax is Gross

New Assumption 2: Aux Load = 25 MW

Name Plate	569 MW
Summer Capability	523 MW

New Assumption 1: Pmax is Gross

New Assumption 2: Aux Load = 17 MW

Governor Survey & SPP Model Improvements

MDWG Spring Meeting

Dallas, Texas

May 16, 2013

Scott Jordan

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Table of Contents

Frequency Response

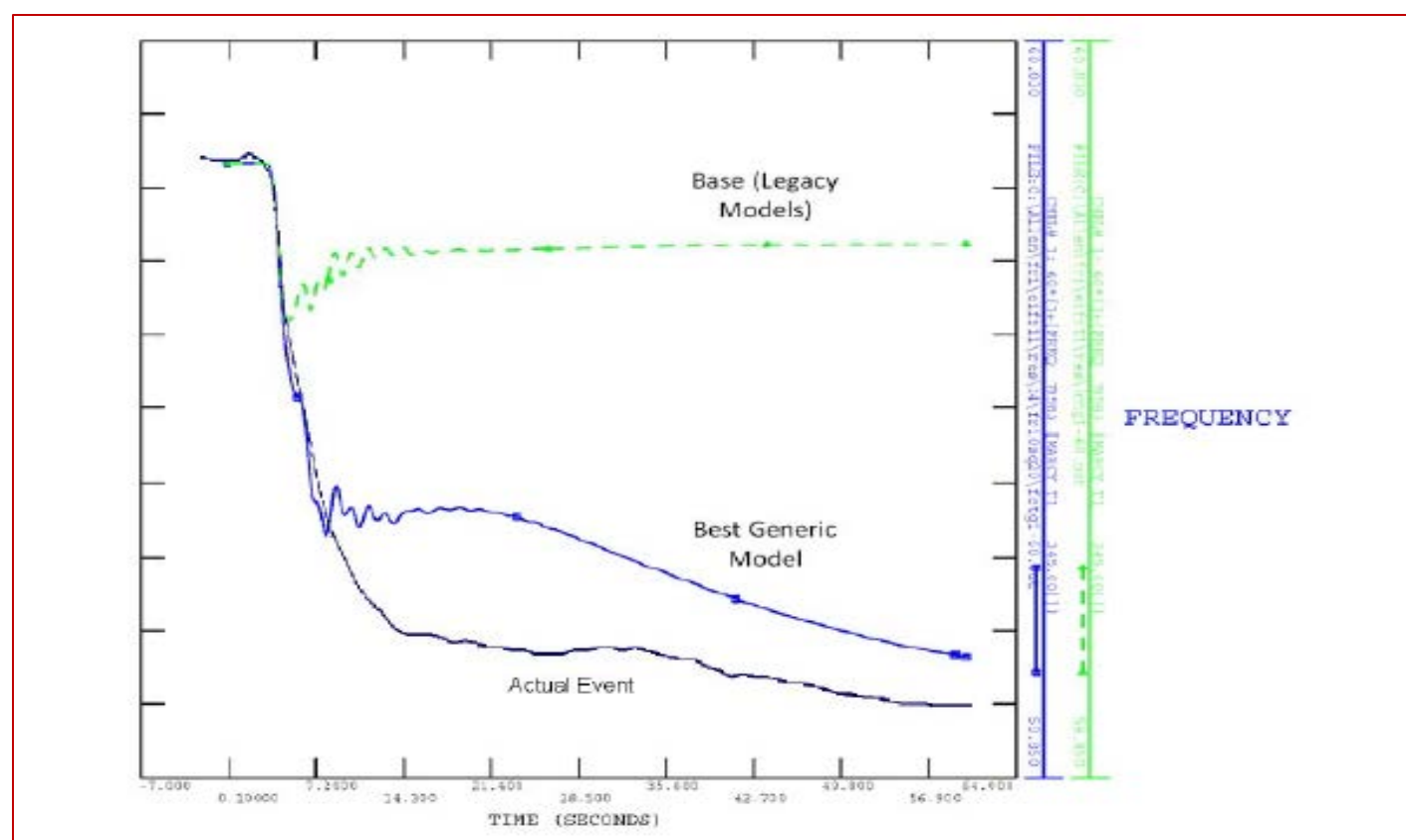
- FERC/NERC GO Machine Governor Survey
- Frequency Response Examples

Aspects of Model Improvement

- Dynamic Case Verification
 - Dyre File data Checking
- Step Response Simulations
 - Exciter
 - Governor

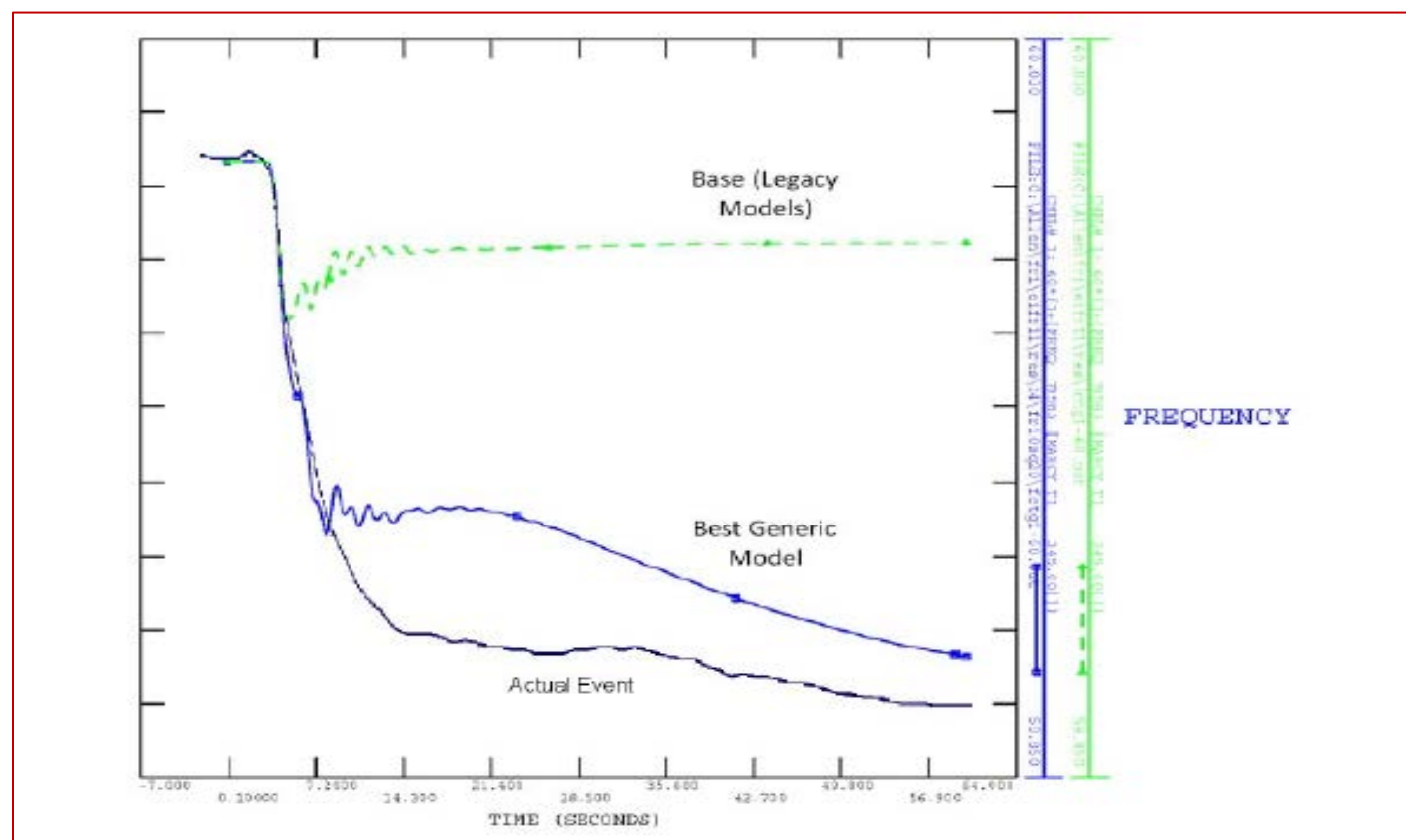
Frequency Response

A Joint FERC/NERC Frequency response study for the WECC, ERCOT and the Eastern Interconnect was commissioned in The Independent Party conducting the study found that the Eastern Interconnect Dynamic Cases were not capable of emulating the actual system response.



Frequency Response

The Eastern Interconnect worked with NERC on modifying the Base Models to get to the “Best Generic Model” response below. This was done by making 70% of the units non-responsive to the event, 20% partially responsive to the event, and the final 10% fully responsive to the event.



Frequency Response

FERC and NERC sent out a Governor Survey to the Generator Owners to try and gain more knowledge of how the generation unit plant controls were affecting the governors

The Survey and Plant visits revealed:

- **Combined Cycle units had no response or a squelched response**
- **Conventional Steam Units**
 - **Sliding or Variable Boiler Pressure Control had no response**
 - **All other units, classified as responsive or a squelched response**
- **Hydro Units were responsive**

Frequency Response

Once these guidelines were applied to the generation units of two RTOs, it was found that 62% of the generation was non-responsive and 38% would be responsive. This did not match the ERAG/NERC Study results. Then the units that were within 5% of their Pmax reviewed. This yielded an additional 23% of units that do to a 5% droop setting would not respond. This made the Percent spreads more in line of even less responsive as an area.

- 77 % non-responsive
- 23 % responsive or squelched

Additional Studies are being performed based on the GO Survey results.

Dynamic Case Verification

Python DOCU Check

- SPP Staff created a Python to perform similar checks to the dyre file model data as the PSSE Code
- Python constructs Excel Spreadsheets with data by Dynamic Model type and then by machine
 - Worksheet with the List of Models and the number of Suspect data points
 - Worksheet for each Model with the suspect data points and the actual suspect data
 - Suspect data is based upon the typical values found in the PSSE Program Documentation under Section 25.5 of Volume II of the Program Application Guide

Dynamic Case Verification

Python DOCU Model List

Model	Constants Checked	SPP Models	SPP Model Errors	ERAG Models		
AC8B	21	9	0	45		
CDSMS1	38	3	3	9		
CIMTR1	12	9	0	17		
CIMTR3	13	19	15	213		
CSTATT	14	2	2	14		
CSVGN1	10	4	2	17		
DEGOV1	13	6	6	23		
ESAC1A	19	1	0	84		
ESAC2A	22	5	5	58		
ESAC5A	15	21	18	70		
ESAC6A	23	1	1	32		
ESAC8B	15	13	12	231		
ESST1A	20	11	11	372		
ESST2A	13	1	1	31		
ESST4B	17	46	0	777		
EX2000	47	3	3	55		
EXAC1	17	35	8	179		
EXAC2	23	25	25	231		
EXAC3	22	4	4	31		

Dynamic Case Verification

Python DOCU GENROU DATA Checks

E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Model	T'do	T"do	T'qo	T"qo	H	D	Xd	Xq	X'd	X'q	X"d=X"q	Xl	S(1.0)	S(1.2)	
GENROU			3												
GENROU			3												
GENROU			3												
GENROU								1.6							
GENROU								1.6							
GENROU	12.5														
GENROU					0.808										
GENROU			2.5											0.194	
GENROU			2.9												
GENROU				0.267											
GENROU			2.9												
GENROU			2.9												
GENROU			2.9												
GENROU				0.46											
GENROU	13.4		4.1												
GENROU	10.296														
GENROU	10.296														
GENROU				0.22											
GENROU			2.7												
GENROU			2.8												
GENROU			2.8												
GENROU															

Step Response Simulations

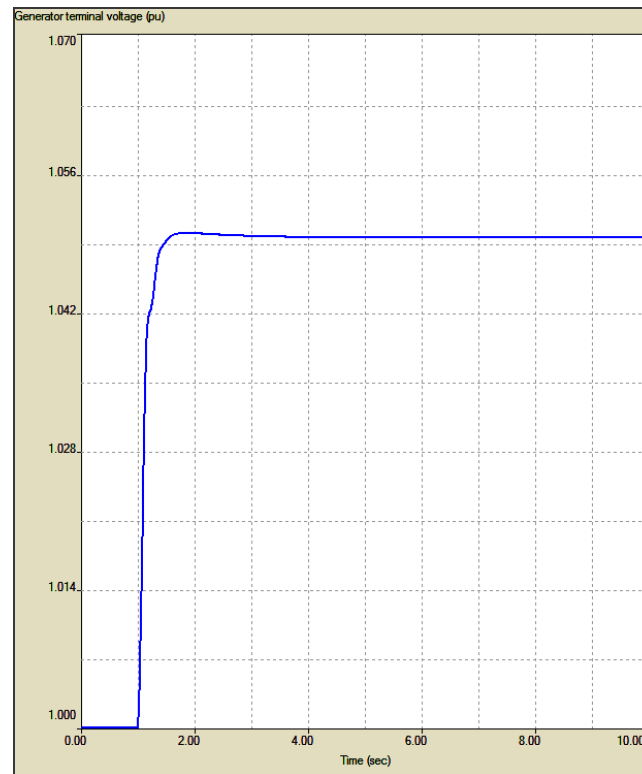
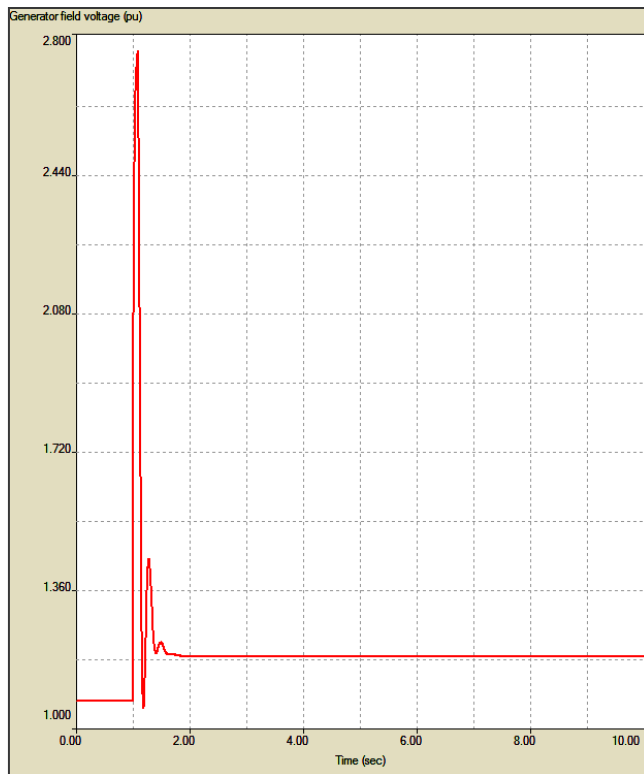
Exciter & Governor Testing

- SPP Staff is in the process of performing Exciter & Governor step response simulations
- DSA Tools TSAT is being used to perform the Step Response Simulations
- Segments of generation units based on Machine MVA using
- SPP Staff Reviewing Output

Step Response Simulations

Exciter & Governor Testing

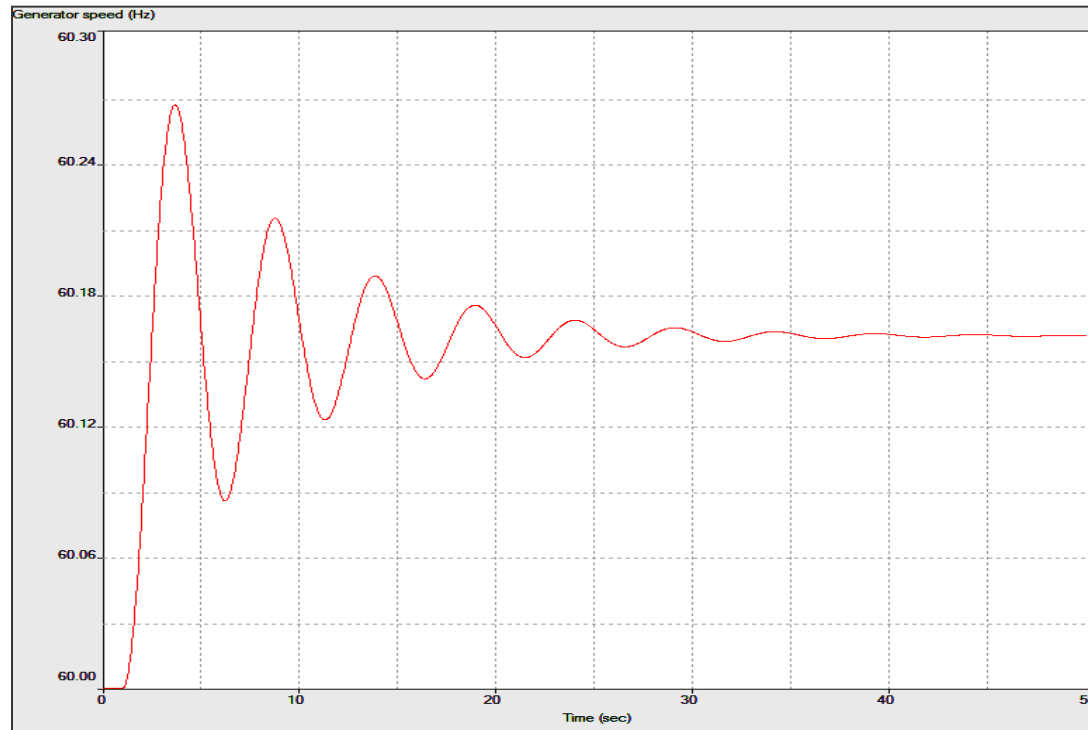
Exciter Step Response



Step Response Simulations

Exciter & Governor Testing

Governor Step Response



Next Steps:

Work with ERAG-MMWG on Frequency Response Study

- Continued Governor Response Testing
- Develop a Plan at the ERAG-MMWG to replace Governor Models with one that can be disabled, squelched, or fully responsive
- Still keep original data somehow
- SPP will work with SPP Modeling Contacts to Implement

SPP will work with Members through Model Verification Efforts

- SPP will continue to Test Exciters and Governors
- Will take everyone working together
 - Transmission Owners, Transmission Planners, & Generator Owners
 - Regional Transmission Organization

Scott Jordan

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**Southwest Power Pool
Model Development Working Group
Charter
December 15, 2008**

Purpose

The Model Development Working Group (MDWG) is responsible for the maintenance of transmission system models and applicable SPP Criteria related to (power flow, short circuit models, and associated stability database) which represents the current and planned transmission system of the Southwest Power Pool. It is also responsible to provide the Eastern Interconnection Reliability Assessment Group (ERAG) Multiregional Modeling Working Group (MMWG) with data that supports the development of inter-regional transmission system models.

Scope of Activities

In carrying out its purposes, the MDWG will:

1. Review and develop applicable SPP Criteria related to the development, maintenance, and coordination of models in support of: the SPP Transmission Expansion Planning (STEP), Generation Interconnection, Transmission Service Study, North American Electric Reliability Corporation (NERC) Compliance, and any other planning activities within SPP.
2. Determine the models that should be used in the RTO, basis for the models and how they are modified for their purpose.
3. Review and periodically monitor the NERC Reliability Standards impacts on Transmission System planning models within SPP. Identify applicable NERC Standards, SPP Regional Standards, and SPP Criteria. Coordinate response on behalf of SPP.
4. Maintain Transmission System planning models that represent the current and planned electric network of SPP.
5. Provide ERAG MMWG with the SPP portion of the Eastern Interconnection current and planned Transmission System planning models and coordinate incorporating ERAG MMWG models into the SPP system models.
6. Ensure that the Transmission System planning models adequately support the needs of SPP organizational groups.



Representation

The MDWG membership consists of a minimum of 8 and up to 12 representatives from the SPP membership, including the chair and vice-chair.

Duration

Permanent.

Reporting

The MDWG reports to the Transmission Working Group (TWG). As necessary the MDWG may appoint a member of the MDWG as a liaison to other working groups for specific issues or action items being coordinated.

Bulk Electric System Definition & Exception Process

May 16, 2013

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Overview

- **Phase 1 Definition of Bulk Electric System**
- **Requesting exception**
- **Exception process**
- **Future changes/Unknowns**

Phase 1 Definition of Bulk Electric System

- **Effective Date July 1st 2013**
- **Base definition**
 - Unless modified by the lists shown below, all Transmission Elements operated at 100kV or higher and Real Power and Reactive Power Resources connected at 100kV or higher. This does not include facilities used in the local distribution of electric energy.
- **Inclusion List (5)**
- **Exclusion List (4)**

Inclusions

- **I1 – Transformers (Both windings greater than 100KV)**
- **I2 – Generating Resources (20MVA single unit 75 MVA Multiple unit)**
- **I3 – Blackstart Resources (identified in restoration plan)**
- **I4 – Dispersed Power Producing Resources (solar/wind/etc...)**
- **I5 – Static or Dynamic devices that supply reactive power (Connected at 100KV directly or through dedicated transformer)**

Exclusions

- **E1 – Radial Systems (3 criteria: load, generation not in I3 less than 75 MVA, load and generation)**
- **E2 – Behind The Meter Generation (Serves load and net capacity doesn't exceed 75 MVA to the BES)**
- **E3 – Local Area Networks (100KV-300KV with flow only into network, 75 MVA gross nameplate rating limit, not part of a flowgate or transfer path)**
- **E4 – Retail Customer Reactive Devices (solely for its own use)**

Guidance Document (Not Finalized)

- **Diagrams (Blue for BES, Green Non BES)**
- **Examples for all 5 Inclusions**
- **Examples for all 4 Exclusions**
- **How you use the definition to classify elements (hierarchy approach to using the definition)**
- **Not part of the Definition (reference only)**

Requesting Exception

- Identify elements based on phase 1 definition
- Must demonstrate that an Element is or is not necessary for reliable operation
- Use standardized form
- RE contacts (Greg Sorenson & Deborah Currie)
- Notification to applicable PC, RC, TOP, TP, and BA
- Note: Owners are not the only entities that can submit requests (Owners must be notified if element they own is being submitted by another entity)

Exception Process

- **Review Elements per Phase 1 Definition**
- **Exception request submitted to RE (Owner or Submitting entity (SE)) with supporting documentation**
- **RE reviews application for completeness**
- **RE conducts substantive review (technical review panel)**
- **RE sends request to NERC with recommendation**
- **SE can comment on recommendation**
- **NERC reviews request**
- **NERC issues a decision**
- **Appeal process is available**

Future Changes/Unknowns

- IT application in development for exception submittals
- Rehearing requests filed with FERC could delay effective date of July 1st 2013
- Phase two work in progress to further refine the definition
- Guidance Document

References

- **Process Document**
 - Search for Docket RM12-7 January 25th 2012 under FERC website
- **Appealing NERC determination document in Rules of Procedure**
 - [http://www.nerc.com/docs/standards/sar/ROP 100-1600 eff 2010-7-11 CLEAN 20filed with FERC – REVISED FOR BES EXCEPTION PROCEDURE - 1-9-2012 \(2\) \(2\).pdf](http://www.nerc.com/docs/standards/sar/ROP%20100-1600%20eff%202010-7-11%20CLEAN%20filed%20with%20FERC%20%E2%80%93%20REVISED%20FOR%20BES%20EXCEPTION%20PROCEDURE%20-%201-9-2012%20(2)%20(2).pdf)
- **Exception Request Form**
 - [http://www.nerc.com/docs/standards/sar/Draft BES Exception Request Form 9-9-11.pdf](http://www.nerc.com/docs/standards/sar/Draft%20BES%20Exception%20Request%20Form%209-9-11.pdf)
- **Exception Process Flow Chart**
 - [http://www.nerc.com/docs/standards/sar/Proposed BES Exception Request process flowchart timelines 9-9-11.pdf](http://www.nerc.com/docs/standards/sar/Proposed%20BES%20Exception%20Request%20process%20flowchart%20timelines%209-9-11.pdf)

References Cont'...

- **Bulk Electric System Guidance Document**
 - http://www.nerc.com/docs/standards/sar/bes_definition_guidance_document_20121003_final.pdf
- **Bulk Electric Definition Filed with FERC**
 - http://www.nerc.com/docs/standards/sar/bes_definition_third_posting_roadmap_20111107_clean.pdf
- **Order 773 (FERC Final rule on Bulk Electric System Definition)**
 - <http://www.ferc.gov/whats-new/comm-meet/2012/122012/E-5.pdf>
- **Order 888 (Seven Factor Test for identifying Local Distribution)**
 - <http://www.ferc.gov/legal/maj-ord-reg/land-docs/rm95-8-00w.txt>